

## CLAIMS

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1. A bioadhesive composition comprising:
  - (a) 28-60 wt% of a copolymer comprising repeating units derived from (i) one or more monomers selected from olefinically unsaturated sulphonic acids (ii) one or more olefinically unsaturated carboxylic acids, the ratio by weight of the sulphonic acid units to the carboxylic acid units being from 30:1 to 1:1, and (iii) an alkoxy polyethyleneglycol acrylate or methacrylate ;
  - (b) 20-45 wt% of a plasticizer(s); and
  - (c) 10-55 wt% of water.
- 15 2. The composition of claim 1, comprising as sulphonic acid units 2-acrylamido-2-methyl-propanesulphonic acid or a salt thereof.
3. The composition of claim 1, comprising as sulphonic acid units 2-acrylamido-2-methyl-propanesulphonic acid sodium salt (NaAMPS or ATBS-Na).
- 20 4. The composition of any preceding claim further comprising as sulphonic acid units 3-sulphopropyl acrylate (SPA) or a salt or analogue thereof.
- 25 5. The composition of any preceding claim, comprising as carboxylic acid units acrylic acid, methacrylic acid or a mixture thereof.
6. The composition of any preceding claim, comprising 32-52 wt% of the copolymer.
- 30 7. The composition of any preceding claim, wherein the ratio by weight of sulphonic acid units to carboxylic acid units is from about 2.5:1 to about 12:1.

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8. The composition of any preceding claim, wherein the alkoxy polyethyleneglycol acrylate or methacrylate is methoxy polyethylene glycol monoacrylate.
- 5 9. The composition of any of claims 1-7, wherein the alkoxy polyethyleneglycol acrylate or methacrylate is methoxy polyethylene glycol monomethacrylate.
- 10 10. The composition of any of claims 19-22, wherein the alkoxy polyethylene glycol acrylate or methacrylate is present in an amount of 1-10 wt%.
11. The composition of any preceding claim, further comprising 1-10 wt% copolymerised  $\beta$ -carboxyethyl acrylate.
- 15 12. The composition of claim 11, comprising 5-8 wt% copolymerised  $\beta$ -carboxyethyl acrylate.
13. The composition of any preceding claim, comprising 25-45 wt% plasticizer.
- 20 14. The composition of any preceding claim, comprising 20-35 wt% plasticizer.
15. The composition of any preceding claim, wherein the plasticizer comprises a water-soluble polyhydric alcohol that is liquid at ambient temperatures.
- 25 16. The composition of any preceding claim, wherein the plasticizer comprises glycerol or a mixture of glycerol and one or more other polyols.
- 30 17. The composition of any preceding claim, comprising a mono- or diester of polyethylene glycol.

18. The composition of claim 17, comprising a mono- or diester of polyethylene glycol with lauric, myristic, palmitic, stearic, oleic, arachidic or erucic acid.
- 5 19. The composition of any preceding claim, comprising 10-35 wt% water.
20. The composition of any of claims 1-18, comprising 25-32 wt% water.
- 10 21. The composition of any claim preceding claim, comprising copolymerised acryroyl oxyethyl trimethyl ammonium chloride, 3-acrylamidopropyl trimethyl ammonium chloride or other cationic olefinic comonomer in an amount of 0.1% to 15 wt%.
- 15 22. The composition of claim 21, wherein the cationic olefinic comonomer is present in an amount of 0.1% to 5 wt%.
23. A bioadhesive composition comprising:
  - (a) 28-60 wt% of a polymer based on repeating units derived from one or more monomers selected from olefinically unsaturated sulphonic acids;
  - 20 (b) 20-45 wt% of a plasticizer(s); and
  - (c) 10-55 wt% of water;
  - (d) at least one of an alkoxy polyethyleneglycol acrylate, methacrylate and  $\beta$ -carboxyethyl acrylate, acryroyl oxyethyl trimethyl ammonium chloride or 3-acrylamidopropyl trimethyl ammonium chloride, the balance being electrolyte and optional ingredients.
24. A bioadhesive composition comprising:
  - (a) a copolymer comprising repeating units derived from (i) one or more monomers selected from olefinically unsaturated sulphonic acids (ii) one or more olefinically unsaturated carboxylic acids, the ratio by weight of the sulphonic acid units to the carboxylic acid units being from 30:1 to 1:1;

(b) a water-soluble polyhydric alcohol that is liquid at ambient temperatures;

(c) a mono- or di-ester of polyethylene glycol with lauric, myristic, palmitic, stearic, oleic, arachidic or erucic acid; and

5 (d) water.

25. A bioadhesive composition comprising:

(a) a copolymer comprising repeating units derived from (i) one or more monomers selected from olefinically unsaturated sulphonic acids (ii) one or more 10 olefinically unsaturated carboxylic acids, the ratio by weight of the sulphonic acid units to the carboxylic acid units being from 30:1 to 1:1, and (iii)  $\beta$ -carboxyethyl acrylate;

(b) a plasticiser;

(c) water.

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26. A medical electrode, bandage or the like having a layer of a bioadhesive composition as claimed in any preceding claim.

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27. A medical electrode that could be used on soft, sensitive skin of the body 20 for monitoring or stimulation applications and having a bioadhesive composition as claimed in any of claims 1-25.

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28. A medical electrode, bandage or the like having a layer of bioadhesive 25 composition as claimed in any of claims 1-25 that also has the ability to deliver essential oils and natural moisturisers to the skin.

29. An uncured composition for UV-curing into the composition of any of claims 1-25 and including as photoinitiator a mixture of an oligomeric  $\alpha$ -hydroxyketone and 2-hydroxy-2-methyl-1-phenyl-1-propanone.

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30. A method for making a bioadhesive composition comprising:

providing an uncured composition comprising (a) 28-60 wt% of monomers to form a copolymer which monomers comprise olefinically unsaturated sulphonic acids (ii) one or more olefinically unsaturated carboxylic acids, the ratio by weight of the sulphonic acid units to the carboxylic acid units being from 30:1 to 1:1, and (iii) an alkoxy polyethyleneglycol acrylate or methacrylate; (b) 20-45 wt% of a plasticizer(s); (c) 10-55 wt% of water; and (d) at least one photoinitiator including an oligomeric  $\alpha$ -hydroxyketone and 2-hydroxy-2-methyl-1-phenyl-1-propanone; and

UV-curing said composition.

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31. A method for making a bioadhesive composition comprising:

providing an uncured composition comprising (a) monomers to form a copolymer which monomers comprise (i) olefinically unsaturated sulphonic acids and (ii) one or more olefinically unsaturated carboxylic acids, the ratio by weight of the sulphonic acid units to the carboxylic acid units being from 30:1 to 1:1; (b) a water-soluble polyhydric alcohol that is liquid at ambient temperatures; (c) a mono- or di-ester of polyethylene glycol with lauric, myristic, palmitic, stearic, oleic, arachidic or erucic acid; (d) water; and (e) at least one photoinitiator including an oligomeric  $\alpha$ -hydroxyketone and 2-hydroxy-2-methyl-1-phenyl-1-propanone; and

UV-curing said composition.

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32. A method for making a bioadhesive composition comprising:

providing an uncured composition comprising (a) monomers to form a copolymer which monomers comprise (i) one or more monomers selected from olefinically unsaturated sulphonic acids (ii) one or more olefinically unsaturated carboxylic acids, the ratio by weight of the sulphonic acid units to the carboxylic acid units being from 30:1 to 1:1, and (iii)  $\beta$ -carboxyethyl acrylate; (b) a plasticiser; (c) water and (d) at least one photoinitiator including an oligomeric  $\alpha$ -hydroxyketone and 2-hydroxy-2-methyl-1-phenyl-1-propanone; and

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UV-curing said composition.